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Increasing the Education Attainment of Hispanics: Program Effectiveness

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PREFACE

The Hispanic Scholarship Fund (HSF) has set the goal of doubling the rate at which Hispanics earn a college degree within the next decade. This report was prepared as background material for a larger study designed to assist HSF achieve this goal. It reviews what is known about the effects of a broad set of interventions designed to enhance the education attainment of minorities and/or low-income students. Four types of programs that intervene at different stages in the life of students are examined: Early childhood programs for children-at-risk; high school dropout prevention programs; college-going incentive programs; and college retention programs.

The findings from the overall project are contained in Georges Vernez and Lee Mizell, *Goal: To Double the Rate of Hispanics Earning a Bachelor's Degree*, Santa Monica, Calif.: RAND, DB-350-HSF, 2001.

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SUMMARY

The Hispanic Scholarship Fund (HSF) is seeking to double the rate at which Hispanics graduate from college with a Bachelor degree. To assist HSF in developing a strategy to reach its goal, RAND has developed information to better understand the factors that promote or impede the educational attainment of Hispanics and to identify effective policies and programs.

As part of this overall effort, this report reviews what is known about the effects of four types of interventions designed to increase, directly or indirectly, the educational attainment of at-risk and/or low income students. They are: Early Childhood programs for children-at-risk; High School Dropout Prevention programs; College-Going Incentive programs; and College Retention programs. These interventions vary in their objectives, time of intervention in the lives of students, and the array of services they provide.

There are a limited number of evaluation studies of these programs that meet a minimum standard of reliability. Placing ourselves, however, in the role of someone having to decide whether and where to invest to increase the education attainment of Hispanics, we concluded the following:

All four types of interventions have a positive effect on the educational attainment of program participants. The size of the effect, however, varies greatly across types of interventions and across the programs within each type of intervention (Table S.1). Given the small sample sizes employed by most of the available evaluation studies a *zero effect* cannot be entirely discounted for each type of intervention:

- *Early childhood* programs were estimated to increase in-grade retention from 3 to 75 percent among high-risk children and to increase the high school graduation rate from 26 to 37 percent among students who otherwise had a low graduation rate of about 50 percent.
- *School- and community-based high school dropout prevention* programs decreased the dropout rate by 23 to 92 percent among students with a 12 to 29 percent pre-program probability of dropping out of high school. A smaller effect size, varying from 3 to 63 percent, was measured for *alternative schools* that targeted students with a higher dropout rate ranging from 16 to 47 percent.

- *College-going* programs were found to increase college-going in a range from 7 to more than 70 percent, with a larger effect size for students with a low pre-program probability of going to college.

Table S.1
Effects of Selected Intervention Programs on Educational Attainment

Program Type	Indicator	Pre-program baseline	Range of Effect in percentage change	Program Costs per student
Early Childhood Programs				
Small scale/model program	In-grade retention	16% to 61%	- 3% to -75%	\$9,500 plus
	High school graduation rate	49% to 53%	+26% to +37%	
Large-Scale Program	In-grade retention	36% to 63%	- 19% to -36%	\$3,000 to \$6,000
	High school graduation rate	49%	26%	
High School Dropout Prevention Programs				
School/Community-based	High school dropout rate	12% to 29%	- 23% to -92%	\$300 to \$3,300
Alternative Schools	High school dropout rate	16% to 47%	-3% to -63%	\$1600 to \$3,800
College-going Programs				
College-going Programs	College-going rate	25% or less 35% or more	70% or more 6% to 32%	\$1500 to \$5,000

Note: Some effects are not statistically significant. Hence, zero should be considered a reasonable inclusion when considering the range of program effects.

The studies provide no information about why the measured effects vary so much across programs within type of intervention. Each program offers a multiple and overlapping set of services. Indeed, the comprehensiveness and multiplicity of services are the hallmark of each one of the programs reviewed.

Differences in characteristics of program participants appear to affect outcomes. For instance, dropout prevention programs were measured to have *less* success in increasing high school graduation rates for students with a low (pre-program) probability of graduating from high school (50 percent or less) than for students with a higher such probability (70 percent or more). By contrast, college-going programs were measured to have a higher effect on college enrollment for students with a low (pre-

program) probability of going to college (25 percent or less). These programs, however, seem to target those students “most likely to succeed” within the targeted group.

Finally, lack of reliable information on program costs means that the cost effectiveness of the various types of interventions cannot be ascertained. Hence, the studies provide no guidance upon whether it would be more effective to intervene during the pre-school years, the middle school years, the high school years, or simply the transition from high school to college. The studies reviewed suggest is that there is much that can be potentially gained by intervening at any level in the educational process and that it is not too late to intervene at the high school level or in the transition years from high school to college and beyond.

Chapter 1

INTRODUCTION

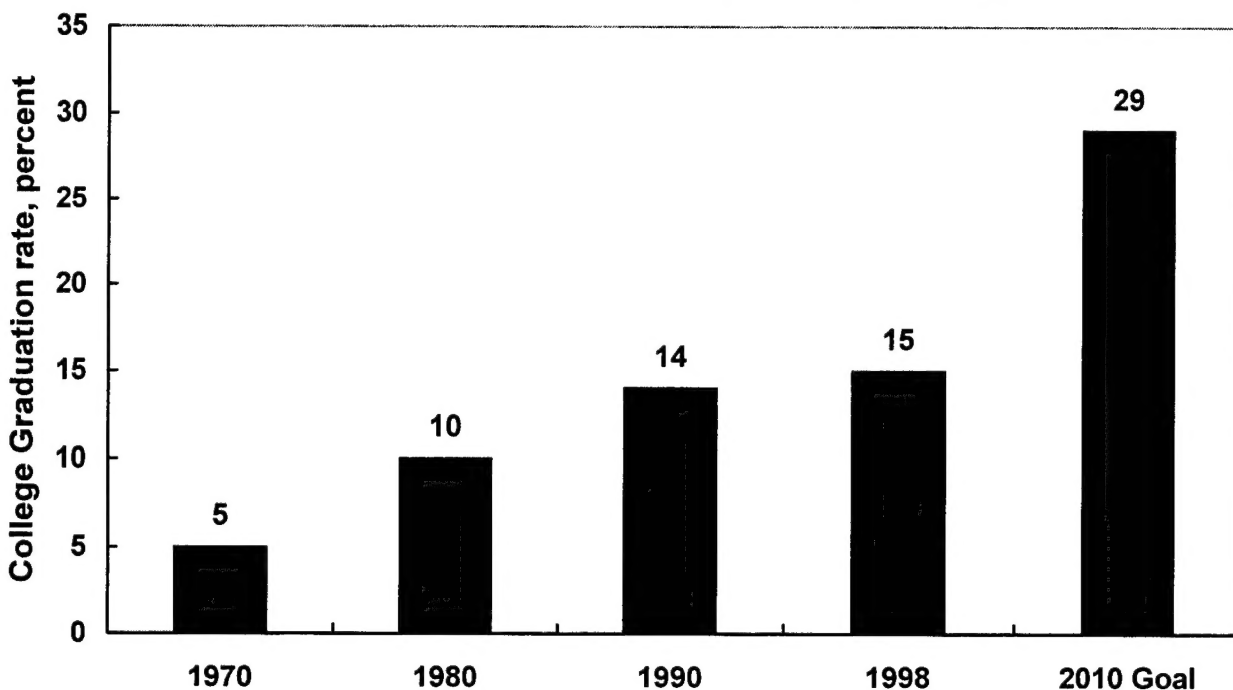
BACKGROUND

Fueled by immigration and high birth rates, the number of Hispanics in the United States is growing eight times more rapidly than the population as a whole. By year 2015, we can expect the share of Hispanics residing in the country to increase from 12.5 percent currently to over 16 percent. Two out of every five persons of school and college age are projected to be Hispanic by year 2015, a larger share than in the overall population (Vernez and Krop, 1999).

These trends raise concerns that the continuing low high school and college graduation rates of Hispanics relative to those of other racial/ethnic groups are not adequate to provide the majority of them with the level of education and skills necessary to compete effectively in the U.S. changing economy. These trends also raise the specter of continuing, if not increasing, income disparities between racial/ethnic groups (Vernez et al., 1999).

It is in this changing demographic and economic context that the Hispanic Scholarship Fund (HSF) has set a goal to double the rate at which Hispanics graduate from college with a bachelor degree within the next decade or so. Meeting such a goal clearly presents an enormous, but not impossible challenge. Indeed, there are precedents for such increases. As shown in Figure 1, the college graduation rate of native-born Hispanics aged 25-29 doubled in the 1970s (from 5 to 10 percent) and again increased by 40 percent (from 10 to 14 percent) in the 1980s. Although the graduation rate has stabilized at that level in the 1990s, further increases in the Hispanic college graduation rate do not seem unattainable.

Figure 1: College Graduation Rate of Native-Born Hispanics, ages 25-29



PURPOSE OF STUDY

This study is part of a larger project designed to provide empirically based information to enable HSF to refine its goal, and to develop and implement a comprehensive strategy to meet it. The project had three main objectives:

1. To describe, analyze, and model the educational experience of Hispanics from kindergarten to graduate school, developing standardized measures at key decision points in the educational continuum.
2. To identify the key factors—and points of policy and programmatic leverage—that affect Hispanic student educational decisions and eventual attainment.
3. To identify alternative approaches for enhancing Hispanic students' educational outcomes and assess their potential effectiveness towards the goal of doubling the rate of Hispanics earning a college degree.

The above objectives were addressed in the following complementary tasks:

1. Developing a set of indicators of educational attainment at key stages in the education process and analyze trends in these indicators.
2. Updating and expand a model of the flows of Hispanics and other students from primary school to college to provide a baseline for improvement.
3. Identifying factors that affect the education attainment of Hispanics at various stages of the education continuum and analyze trends in these factors.
4. Identifying potentially effective policies and programs designed to enhance the education attainment of Hispanics at various stages of the education continuum.
5. Assessing the effects of alternative approaches on the rate of Hispanics earning a college degree and the costs and benefits of these approaches.

This report summarizes our findings on the fourth of the above five tasks. Findings from the overall project are published in Vernez and Mizell (2001).

Chapter 2

INTERVENTIONS TO INCREASE EDUCATIONAL ATTAINMENT

Over the years, a countless number of interventions have been designed and implemented to enhance, directly or indirectly, the educational performance of lagging or disadvantaged students, most particularly of minority students. In this section, we briefly review their key characteristics, outline our approach to assessing their effectiveness in increasing educational attainment, and discuss the limitations of this review.

PROGRAM CHARACTERISTICS

Interventions intended to increase the educational performance of students vary in terms of objectives and in timing in the lives of the students targeted. They can be broadly aggregated into the following four groups of interventions:

1. Early-childhood intervention programs for children-at-risk;
2. High school drop-out prevention programs;
3. College-going incentive programs; and
4. College retention programs.

As its name indicates, the first group of interventions focuses primarily on children in their early years, most particularly the preschool years. The next two groups of interventions focus on students in their high school years when the decision to complete high school and to go to college is in the process of being made. The last group of interventions focuses on students who are already enrolled in college. When the intervention takes place determines the primary implementing institutions: community-based organizations and primary schools for the first group of interventions; community-based organizations, high schools (sometimes in collaboration with a college) for the two next groups of interventions; and colleges and universities for the last group of interventions.

Each group of interventions also differs in the assumptions made about the primary factors that cause students to lag educationally at different stages of their development. They include inadequate stimulation, health care, and nutrition, a lack of parenting skills and support in the pre-school ages; a lack of students' motivation and interest, inadequate access to information and resources in high school; a too demanding, culturally isolated environment, and inadequate academic preparation and resources in college.

Within each group of interventions, programs differ in the specific approach taken. Early childhood intervention programs range from the well-known and widely praised institution-based Head Start Program (Schweinhart, Barnes, and Weikart, 1993) to the development and support of parenting skills and strategies (Lally, Mangioni, and Honig, 1988) and the combination of home support and daycare or enriched preschool (Farrington, 1994; Yoshikawa, 1994). Programs directed at parents with at-risk preschool children provide services ranging from parental training to family therapy to assistance in family management (McCord, et. al, 1994; Alexander and Parsons, 1973; Tremblay, 1991).

School-based drop-out programs aim at increasing youths' attachment to school through enforcement of truancy laws, the provision of skills to resist peer pressures to engage in negative behavior, intensive counseling, tutoring, "detracking" of students, and the establishment of career academies and magnet schools (Tolan and Guerra, 1994; Stern, et. al., 1992; Stern, et. al., 1994).

College attendance incentive programs generally combine support services--including counseling, tutoring, mentoring-- with cash and scholarship incentives (Robyn, 1995; Hahn, Leavitt, and Aaron, 1994; Taggard, 1995). In cooperation with high schools, colleges have also employed a variety of complementary interventions to increase access to college by underrepresented students, including outreach campaigns to recruit students for academic summer camps and summer bridge programs (Appel, et. al., 1996).

Finally, interventions that seek to increase college retention rates of underrepresented students rely on the use of mentors, counselors, remedial and enrichment programs to overcome lonerism and/or inadequate academic preparation (Appel et. al., 1996; Hood 1990; Hamby, 1998; Trippi and

Cheatham, 1989; Sandoval, 1990). Colleges also have begun to implement various diversity initiatives including curriculum changes and diversity sequences in the core curriculum designed to demonstrate an institution's commitment to students of color and provide an environment in which these students feel welcome (Office of Academic Multicultural Initiatives, 1994).

Clearly, not all of these programs are explicitly directed at increasing educational attainment. Some direct their interventions at the lack of parental resources and information or at problems such as poor parental supervision, erratic child rearing, and child abuse and neglect. They may also target students' specific behavioral problems (including the use of drugs), low motivations and/or low academic achievements. But these problems are interconnected: poor educational performance does not appear alone. Research suggests that the likely sequence of poor academic performance and other problems in youths are all interconnected with causality flowing both ways (Thornberry, 1987; Greenwood, et. al., 1996). Thus, secondary effects on educational attainment may be expected from interventions that have been shown to decrease behavioral problems or increase students' motivations.

MEASURING PROGRAM EFFECTIVENESS

How effective are the various types of interventions described above in increasing the educational attainment of minorities? To address this question, we reviewed studies that have evaluated one or more of these interventions. To be included in our review, the studies had to meet the following four criteria. They must have:

1. Compared the outcomes of the treatment group with that of a control group or with a matched comparison group. Evaluations lacking either of these items cannot provide minimal assurance that a change in the outcome of the treatment group is due to the program.
2. Targeted primarily (although not exclusively) non-white children or youths from low-income families. This was to assure that the findings could be generalized to Hispanic students, many of whom live in low-income families.
3. Measured the effects of the program on one or more of the following measures of educational attainment:

- Placement rate in special education programs (SPED).
- In-grade retention rate.
- High school dropout rate.
- High school graduation rate.
- College attendance rate.
- College persistence rate.
- College graduation rate.

Many relevant studies have measured effects of programs on other outcomes, including educational achievement (i.e. performance on standardized math, reading, or other tests) or health status. Although changes in these measures may be related indirectly to educational attainment, the nature of this relationship is not known. Hence, unless a study directly measured an effect on educational attainment, it was not included in this review.

4. Provided sufficient information on program components, implementation, and duration so that it could be determined that an intervention had actually taken place.

The number of studies that meet all four above criteria are few relative to the large number of studies that are typically labeled “evaluation studies.” It is the rare evaluative study that includes both a comparison or control group and includes a student educational attainment outcome measures. The typical evaluation study describes the program activities that have taken place and assesses the extent of implementation of the intervention. A number of studies were also excluded because they had either not targeted the population of interest or did not provide an adequate description of the intervention.

Our findings are summarized in the remaining of this report. Before turning to them, however, various limitations should be noted.

LIMITATIONS

In reading this report, the reader should keep in mind the following limitations. First, not all types of intervention have been evaluated by studies meeting the four criteria above. In particular, there have been few, if any studies that have evaluated the effects in educational attainment of such interventions as lower class size, voucher programs, comprehensive school reform, and similar programs which have become the hallmark of school reform activities of the late 1990s. Some of these interventions have been shown to increase educational achievement, but whether this improvement will eventually translate into increased educational attainment and eventually increased college-going

and college graduation rates remains to be seen (see, for instance, Finn, 1998; Bohrnstedt and Stecher, 1999; Herman, 1999).

Second, many of the programs evaluated were small, often affecting less than 100 students. The effects of these small programs cannot necessarily be extended to similar, scaled-up programs that would serve thousands, if not millions, of students. To account for this limitation, we gave more weight to the results of studies that evaluated large-scale programs. The size of the study samples also affects whether or not statistically significant differences were detected between treatment and comparison groups. In many cases, programs affecting a small number of students produced noticeable changes between the program participants and nonparticipants, but these changes were not statistically significant. As such, it is not possible to rule out the possibility that the program, in fact, had a zero effect on educational attainment.

Finally, there is a paucity of information about the costs of the interventions evaluated. Yet costs are critical to address the question of whether implementing any given intervention promises to generate public and private benefits that exceeds its costs.

Chapter 3

EARLY CHILDHOOD INTERVENTIONS

The presumed positive effects of early childhood care and education on the short- and long-term cognitive and educational outcomes of children have been much written about (Karloly et al, 1998; Reynolds et al, 1997; Currie and Thomas, 1997; Reynolds with Wolfe, 1997; Gomby et al, 1995, Barnett, 1995). Effective childhood programs have been found to share one or more of the following features (Weissberg and Greenberg, 1997):

- A developmentally appropriate curriculum;
- Teachers knowledgeable in early childhood development who receive on-going training and supervision;
- Class size limited to fewer than 20 3- to 5-year olds with at least two teachers;
- Administrative leadership that includes support for the program;
- Systematic efforts to include and enhance parents as partners in their child's education, as well as sensitivity to the non-educational needs of the child and family; and
- Evaluation procedures that are developmentally appropriate.

In addition, some programs, such as the federally funded Head Start program, may offer supplemental services such as medical screenings, immunizations, dental check-ups, dental care, and meals.

STUDIES REVIEWED

The findings of the evaluations of early childhood programs reviewed are summarized in Table 1. Because our purpose is to identify interventions that have the potential to increase long-term educational attainment, only those studies that measured outcomes at or above 7th grade are included. The table differentiates between "small" so-called model programs that target a limited number of children, typically at one location, and large-scale programs that target a large number of children at multiple sites. Generally, small-scale model programs benefit from motivated leadership and staff, lower staff-child ratios and smaller class sizes than larger scale programs (Barnett, 1995). Hence, their

measured effects on children are expected to overstate the effect that might be obtained if these programs were serving larger number of children.

The programs also differ along a number of other dimensions. Some offer full-day care while others only half-day. They also vary in the duration of the services they provide, some being limited to one age group and others providing services over several years. About half of the smaller programs also include making home visits; one program provides one-to-one tutoring and another academic or job training for the mother. With one exception all of the model programs served disadvantaged African American boys and girls. The exception is the Harlem Training Project, which served only boys. The large-scale programs also served disadvantaged children. All of the families served by these programs were low-income, and usually nonwhite – although some low-income white families were also served.

The evaluations included four indicators of educational attainment:

1. Special education (SPED) placement at 7th and/or 12th grade;
2. Grade retention at 7th or 12th grade;
3. High school graduation rate; and
4. College attendance rate.

Nearly all studies measured the effects of the programs on the first two indicators. Although they are not direct measures of education attainment, they are correlated with the school dropout rate. Students who are retained in-grade drop out at a higher rate than those who are not (Roderick, 1995). It is also the case that students enrolled in special education programs dropout of school at a higher rate than those that do not (Lichtenstein and Zantal-Wiener, 1988). The other two indicators were measured by only a few studies; three studies measured effects on the high school graduation rate and only one on the college attendance rate. This reflects the difficulties and high costs of following children over a long period of time.

Table 1: Effects of Early Childhood Education Programs

Program	Brief Description	Outcome Measured	Impact(s)	Follow-up Sample Sizes
Model Programs				
Carolina Abecedarian (1972-1985)	Full-day preschool Parent program for school age Entry: 6 wks to 3 months Exit: 5 to 8 years	Grade retention at age 15 Attended four year college at age 21	Participants = 39% Comparison = 59% Diff = -20 perc. pts % Change = -34% Participants = 35% Comparison = 14% Diff = +21 perc. pts % Change = +150%	E=48 C=44
Florida Parent Education Project (1966-1970)	Infant care Part-day preschool Home visits Entry: 3 to 24 months Exit: 3 years	SPED ² placement at grade 7* Grade retention at grade 7	Participants = 23% Comparison = 54% Diff = -31 perc. pts % Change = -57% Participants = 28% Comparison = 29% Diff = -1 perc. pt % Change = -3%	E=83 C=24
Milwaukee Project (1968-1978)	Infant care Full-day preschool Job/academic training for mothers Entry: 3 to 6 months Exit: 5 years	SPED placement at grade 8	Participants = 41% Comparison = 89% Diff = -48 perc. pts. % Change = -54%	E=17 C=18
The Louisville Experiment/ Curriculum Comparison Study (1965-1967)	Part-day preschool Kindergarten program Entry: 4 years Exit: 5 or 6 years	SPED placement at grade 12 Grade retention at grade 12 HS Graduation rates	Participants = 32% Comparison = 63% Diff = -31 perc. pts % Change = -49% Participants = 26% Comparison = 58% Diff = -32 perc. pts % Change = -55% Participants = 67% Comparison = 53% Diff = +14 perc. pts % Change = +26%	E=168 C=51
Early Training Project (1962-1967)	Summer part-day preschool Home visits Entry: 4 or 5 years Exit: 6 years	SPED placement at grade 12* Grade retention at grade 12 HS Graduation rates	Participants = 5% Comparison = 29% Diff = -24 perc. pts % Change = -83% Participants = 58% Comparison = 61% Diff = -3 perc. pts % Change = -5% Participants = 68% Comparison = 52% Diff = +16 perc. pts % Change = +31%	E=36 C=16

Experimental Variation of Head Start (1968-1969)	Preschool Entry: 4 Exit: 5 years	SPED placement at grade 7 Grade retention at grade 7	Participants = 13% Comparison = 15% Diff = -2 perc. pts % Change = -13% Participants = 10% Comparison = 16% Diff = -6 perc. pts % Change = -38%	E=102 C=19
Harlem Training Project (1966-1967)	One-to-one tutoring and child directed play for preschoolers Entry: 2 or 3 years Exit: 4 years	Grade retention at grade 7*	Participants = 30% Comparison = 52% Diff = -22 perc. pts % Change = -42%	E=168 C=51
High/Scope Perry Preschool (1962-1967)	Preschool program Home visits Entry: 3 to 4 Exit: 5 years	SPED placement at grade 12 Grade retention at grade 12 HS Graduation rate by age 27*	Participants = 37% Comparison = 50% Diff = -13 perc. pts % Change = -26% Participants = 15% Comparison = 20% Diff = -5 perc. pts % Change = -25% Participants = 71% Comparison = 54% Diff = +17 perc. pts % Change = +32%	E=58 C=65
Institute for Developmental Studies (1963-1967)	Part-day preschool School age services Home visits Entry: 4 years Exit: 9 years	SPED placement at grade 7 Grade retention at grade 7	Participants = 0% Comparison = 13% Diff = -13 perc. pts % Change = -100% Participants = 23% Comparison = 43% Diff = -20 perc. pts % Change = -46%	E=63 C=34
Philadelphia Project (1963-1964)	Part-day preschool Home visits Entry: 4 years Exit: 5 years	SPED placement at grade 12 Grade retention at grade 12	Participants = 5% Comparison = 6% Diff = -1 perc. pt % Change = -17% Participants = 38% Comparison = 58% Diff = -20 perc. pts % Change = -35%	E=44 C=37
Verbal Interaction Project (1967-1972)	Preschool home visits Entry: 2 or 3 years Exit: 4 years	SPED placement at grade 7* Grade retention at grade 7	Participants = 14% Comparison = 39% Diff = -25 perc. pts % Change = -64% Participants = 13% Comparison = 52% Diff = -39 perc. pts % Change = -75%	E=79 C=49

Large-Scale Programs				
Child Parent Center (1965-1977)	Preschool and kindergarten programs run by Chicago Public Schools; half-day preschool and full-day kindergarten; requires parent participation, uses child-centered developmentally appropriate curriculum. Entry: 3 or 4 years Exit: 9 years	HS Graduation rate*	Participants = 62% Comparison = 49% Diff = +13 perc. pts % Change = +26%	E=513 C=244
Child Parent Center II (1983-1985)		SPED placement at grade 7* Grade retention at grade 7*	Participants = 12% Comparison = 22% Diff = -10 perc. pts % Change = -45% Participants = 24% Comparison = 34% Diff = -10 perc. pts % Change = -29%	E=757 C=130
Cincinnati Title I Preschool (1969-1970; 1970-1971)	Part-day preschool + full day kindergarten (as compare to part-day kindergarten only) Entry: 4 or 5 years Exit: 6 years	SPED placement at grade 8 Grade retention at grade 8	Participants = 5% Comparison = 11% Diff = -6 perc. pts % Change = -54% Participants = 9% Comparison = 12% Diff = -3 perc. pts % Change = -25%	E=410 C=141
Maryland Extended Elementary (1977-1980)	Entry: 4 years Exit: 5 years	SPED placement at grade 8* Grade retention at grade 8*	Participants = 15% Comparison = 22% Diff = -7 perc. pts % Change = -32% Participants = 31% Comparison = 45% Diff = -14 perc. pts % Change = -31%	E=356 C=306
Rome, GA Head Start (1966)	Head start participation (as compare all disadvantaged children) Entry: 5 years Exit: 6 years	SPED placement* Grade retention*	Participants = 11% Comparison = 25% Diff = -14 perc. pts % Change = -56% Participants = 51% Comparison = 63% Diff = -12 perc. pts % Change = -19%	E=94 C=60
Head Start (NLSY)	Evaluation of the impact of Head Start participation for Hispanic Children using the National Longitudinal Survey of Youth (NLSY).	Probability of grade repetition for children age 10 or older*	Hispanics: No Head Start = 50% W/Head Start = 32% Diff = -18% % Change = -36% Non-Hispanic Whites No Head Start = .23	Multivariate analysis of NLSY data. n= 376

SOURCES: Adapted from Barnett, W.S. (1995). "Long-term effects of early childhood programs on cognitive and school outcomes," *The Future of Children* 5, no. 3, (Winter 1995), 25-50; also Currie, J. and Thomas, D. (1999). "Does Head Start help Hispanic children?" *Journal of Public Economics* 74: 235-262. * Indicates statistically significant difference at $p < .1$

NOTE: SPED means Special Education.

For each program evaluated, Table 1 displays the name of the program, its key characteristics, the outcomes measured and the actual measures of effect. To assist the reader in interpreting the results, the table shows four values for each type of outcomes measured by the study. The first value indicates the performance of “treatment” children on the selected outcomes and the second indicates the performance for the “comparison” group. For instance, 39 percent of children participating in the Acebederian Carolina program were retained in-grade at age 15 compared to 59 percent for the comparison group. The other two values show the difference between the treatment and the comparison groups in percentage points and in percent change relative to the comparison group. The latter is a measure of the relative improvement provided by the program. In this illustration, these values are 20 percentage points (59-39) and 34 percent (20/59), respectively.

The base measure for the comparison group is shown because it helps define the target population served by the programs and, hence, is critical in assessing whether the programs’ effects could be replicated to other populations. Again, this may best be understood by an illustration. The Carolina Acebederian program served pre-schoolers who had been retained in-grade at a 35 percent rate prior to program participation. It is anyone’s guess whether the program would have achieved the same level (34 percent) of improvement if the population it had served had a lower in-grade retention rate of perhaps 15 percent or a higher retention rate of 85 percent.

Most programs evaluated in Table 1 did serve populations at a disproportionate risk of being retained in-grade or at high risk of being placed in special education.

PROGRAM EFFECTS

Early-childhood programs seem to have a positive effect on educational attainment that persists at least through high school and possibly beyond. This positive effect appears to be independent of the form of intervention (e.g. half day or full day preschool, with or without home visits) suggesting that what matters is some form of early childhood intervention, not so much the form of this intervention. A positive effect was measured in both small scale programs serving few children as well as large scale programs serving thousands of children.

The evaluations measured a sizeable reduction in the rate at which children are placed in special education and the rate at which children are retained at grade 7. The effect seems to persist through grade 12. The size of the effect measured, however, varied greatly across programs. For small programs the effect size varied from a low 13 percent to a large 100 percent reduction in the rate of placement in special education, with statistically significant effects ranging from 57 to 83 percent. As expected given larger sample sizes, the range for large-scale programs was narrower varying from significant effects of 32 to 56 percent. No relationship was found between the measured effect size and the pre-program probability of the target population to be placed in special education. This probability (the comparison group's rate of placement in special education) varied from a low 6 percent to a high 89 percent probability for small-scale programs. The larger scale programs targeted similar populations with a pre-program probability of placement in special education of 22 to 25 percent.

The effect size on the rate of in-grade retention was similarly sizeable and variable. For large-scale programs the measured significant effect ranged from 19 to 36 percent for a target population whose pre-program probability of in-grade retention ranged from 34 to 63 percent. Again, there appears to be no relationship between effect size and pre-program probability of being retained in-grade. The range in the measured effect was broader for small-scale programs (3 to 75 percent), but the average, at 36 percent, was similar to large-scale programs.

There is no apparent relationship between the effect size on the above indicators and the type of program. For instance, the reduction in the in-grade retention rate for half-day preschool averaged 32 percent compared to 30 percent for full-day preschool. Given the limited number of programs that have been adequately evaluated, however, this finding is only suggestive. Addressing this issue would require carrying-out comparative longitudinal evaluations of various programs controlling for differences in program components and characteristics.

The positive effects of early childhood programs on educational attainment in early grades through high school suggested above also seem to carry through high school graduation. Four studies measured an increase in high school graduation rate of 26 to 37 percent on target populations whose pre-program probabilities of graduating from high school were low, ranging from 49 to 53 percent. It

remains to be seen, however, what the effect of early childhood programs would be on populations whose pre-program probability of graduating from high school is higher, i.e. closer to the 80 percent probability for native-born Hispanics in general.

Only two of the studies reviewed followed their subjects beyond high school through college: The Carolina Acebederian Intervention Program and The High/Scope Perry Preschool Study. The former program measured a large, but statistically insignificant, 150 percent effect on college attendance by age 21 for a population whose pre-program probability to attend college was a low 14 percent. The Perry study measured postsecondary educational attainment at age 27 and found that, although participants were more likely to have earned postsecondary credits than a comparison group, differences were too small to be statistically significant. The same applied to college completion rates (Schweinhart, Barnes, Weikart, 1993). Hence, we must wait for additional evidence before we can conclude that early-childhood programs carry their effects into the college years and beyond.

PROGRAM COSTS

Little information is available about the full costs of early-childhood programs. Available information suggests that large-scale preschool programs, such as Head Start and some of the state sponsored programs costs in the range of \$ 3,000 to \$ 6,000 per child annually in current dollars (Gomby et.al., 1995). However, the full costs of these programs may be higher as these federal and state programs may receive additional local funds from either public and/or private sources. The costs of small-scale programs are typically higher, often double to triple the costs of the larger public programs. For instance, the Perry Preschool Program, which combined part-day, part-year center-based services with a weekly home visit cost \$9,000 per family in current dollars. The Infant Health and Development Program, a model program that provided full-day, full year center-based infant care and offered home visits and other support to families cost approximately \$11,900 per family per year in current dollars.

Chapter 4

HIGH SCHOOL DROPOUT PREVENTION PROGRAMS

Secondary school intervention programs are diverse, often locally developed and administered, and most frequently small in size. They can be divided into two types of programs: school- and community- based dropout prevention programs and “alternative school” programs.

School- and community-based dropout programs are the most numerous. In the early grades, these programs focus on addressing factors associated with a higher risk of dropping out including low achievement, retention in grade, lack of parental involvement, and dislike of school. These programs offer academic remediation, additional instruction, parent outreach, and counseling (Fashola, Slavin, Calderón, & Durán, 1996). In the later grades, these programs often combine prevention and intervention strategies, adding to academic remediation and counseling, mentoring, peer tutoring, vocational education, internships, and/or other work experience that highlight the value of a high school or college diploma in the world of work (Fashola and Slavin, 1997). In addition, some programs offer stipends or scholarship and/or develop school-community-business partnerships to provide students with job opportunities. Finally, some of these programs target exclusively at-risk pregnant and parenting teens integrating teen pregnancy prevention programs and providing childcare on-site (OERI, 1987).

Alternative school programs, also called “second chance high schools,” either place students or offer students the opportunity to enroll in a separate school program, either in a school-within-a-school or a school set up specifically to target youths at high risk of dropping out. These schools have smaller class sizes and emphasize vocational education, counseling and career guidance. They also offer internships, often in partnerships with local employers. As suggested below, these alternative school programs target populations that may be twice to three times more likely to dropout from high school than dropout programs that simply offer additional services to traditional students.

There are also an increasingly large number of comprehensive school reform programs whose aim is to improve the educational achievement and social development of all students in a school, district or state. These reforms may involve changes in school governance, enhancing staff training,

reducing class size, instituting site-based management, instituting attendance, disciplinary and/or academic standards, and/or revising curriculum and instructional practices (OERI, 1987; Herman, 1999). These reform efforts are targeted primarily, although not exclusively, on elementary and middle schools. Some of these reform efforts have been evaluated for their effects on educational achievement, i.e. proficiency in reading, math, sciences and/or social studies, but none have been evaluated for their effects on education attainment (e.g., see Herman, 1999). To date, the measured effect on achievement of these reform efforts has generally been small ranging from 1% of a standard deviation on the small side to 25% of a standard deviation on the large side. It is not known whether an improvement of this size on student achievement will actually lead to a gain in education attainment in the form of either a higher high school graduation rate or college going rate. For this reason, these comprehensive programs are not included in this review.

STUDIES REVIEWED

Table 2 summarizes the findings of evaluations of high school dropout prevention programs. The programs that have been evaluated are representative of the variety of programs that have been developed and replicated across the nation over the years. The school-based programs that have been evaluated all provide a multiplicity of services including a combination of counseling, remediation, internships, and in two instances scholarships. Most of the alternative school programs evaluated are school-within-a-school programs. Their key features are briefly described in Appendix A.

For the most part, evaluations of these programs are based on following a small sample of students through high school graduation, thereby limiting the generalization of their findings to broader populations. Exceptions to this pattern include a 1998 study of more than 20 programs that included 10,000 students and a recently completed study of career academies that followed nearly 2,000 students (Kemple and Snipes, 2000). The main outcome measured by these studies is the *high school dropout rate*. In addition, some studies have measured one of the following indicators:

- On track for graduation from high school in 11th grade; and/or
- On time high school graduation rate.

Table 2
Effects of High School Dropout Prevention Programs

Program	Brief Description	Outcome Measured	Impact(s)	Annual \$/ student	Sample Size
Drop-out Prevention Programs					
Achievement for Latinos through Academic Success –ALAS (eval. 1995)	Counseling, remediation, parent component, emphasis on attendance	On track to graduate from HS in 11 th grade 9 th grade dropout rate	Participants = 33% Comparison = 26% Diff = +7 perc. pts. % Change = +27% Participants = 2.2% Comparison = 16.7% Diff = -14.5 perc. pts. % Change = -87%	Not available	E=46 C=48
Coca-Cola Dropout Prevention Program* (eval. 1992)	Peer tutoring, counseling, remediation, home-school link, stipend.	HS Dropout rate	Participants = 1% Comparison = 12% Diff = -11 perc. pts. % Change = -92%	approx. \$300 in current dollars	E=62 C=70
I Have A Dream –IHAD (eval. 1996)	Class adopted by a mentor/sponsor counseling, mentoring, tutoring, scholarships	HS Graduation rate (site 1) HS Graduation rate (site 2)	Participants = 76% Comparison = 37% Diff = +39 perc. pts. % Change = +105% Participants = 69% Comparison = 34% Diff = +35 perc. pts. % Change = +103%	approx. \$3288 in current dollars, not including scholarships	unclear; entire classes evaluated
Project GRAD – Graduation Really Achieves Dreams (eval. 1998)	Statewide scholarships, academic support, internships, and school wide interventions to improve quality of instruction	On-time HS Graduation Rate College going rate	Pre-program = 50% Post-program = 78% Diff = +28 perc. pts. % Change = +56% Pre-program = 10% Post-program = 60% Diff = +50 perc. pts. % Change = +500% *pre/post evaluation of entire school	Not available	E=entire school population
Mathematica's review of 20 dropout pgms (1998) * results aggregated across sites with a median enrollment of 300.	Supplemental Pgm - tutoring, homework help counseling GED Programs - prepared students who had already dropped out get a GED, served about 100 students at a time.	Dropout Rate (end of year 3) Dropout Rate (end of year 3) Completed HS degree or GED	Participants = 11.5% Comparison = 15.0% Diff = -3.5 perc. pts. % Change = -23% Participants = 57% Comparison = 60% Diff = -3 perc. pts. % Change = -5% Participants = 39% Comparison = 24% Diff = +15 perc. pts. % Change = +63%	Median \$2321/ student in current dollars	E= 4 sites C= 4 sites E= 3 sites C= 3 sites E= 3 sites C= 3 sites

Memphis Partners (eval. 1992)	A Saturday program for 10 th graders that offered 17 weeks of academic instruction, life skills instruction, and job readiness instruction.	HS Dropout rate (end of year 2)	Participants = 10.8% Comparison = 28.8% Diff = -18 perc. pts % Change = -64%	approx. \$1650 in current dollars	E=97 C=78
Alternative Schools					
Carlmont Business Academy (eval. 1995)	Vocational school-within-a-school, extracurricular activities, career guidance, voc. ed, internships, small classes	HS Dropout rate* (end of year 3)	Participants = 6% Comparison = 16% Diff = -10 perc. pts % Change = -63%	Not available	E=41 C=48
Career Academies (eval. 2000)	A school-within-a-school, partners w/local employers, academic and occupation-related courses, training.	HS Dropout rate* (High-risk subgroup)	Participants = 21% Comparison = 32% Diff = -11 perc. pts % Change = -34%	Not available	E=959 C=805 Of these..
		HS Dropout rate (Medium-risk subgroup)	Participants = 9% Comparison = 8% Diff = -1 perc. pts % Change = -12.5%		25% were high-risk
		HS Dropout rate (Low-risk subgroup)	Participants = 2% Comparison = 3% Diff = -1 perc. pts % Change = -33%		50% were med-risk 25% were low-risk
Cooperative Alternative Program* (eval. 1992)	Seven school districts created unique governance/ fiscal structure to respond to very high-risk student needs. Created a separate high school.	HS Dropout rate (end of year 2)	Participants = 40.9% Comparison = 47.2% Diff = -6.2 perc. pts % Change = -13%	approx. \$3800 in current dollars	E=102 C=100
Diversified Educational Experiences* (eval. 1998)	An alternative school program for middle- and high school students.	HS Dropout rate (end of year 3)	Participants = 40.7% Comparison = 16.5% Diff = +24.2 perc. pt % Change = +146%	approx. \$2900 in current dollars	E=95 C=97
Mathematica's review of 20 dropout pgms (1998) * results aggregated across sites with/median enrollment of 300.	Alternative Middle Schools	Dropout Rate (end of year 3)	Participants = 9% Comparison = 18% Diff= -9 perc. pts % Change = -50%	Median \$2321/ student in current dollars	E= 3 sites C= 2 sites
	Alternative High Schools	Dropout Rate (end of year 3)	Participants = 39% Comparison = 40% Diff= -1 perc. pts % Change = -3%		E= 5 sites C= 3 sites
New Horizons SWS*	School-within-a-school: smaller	HS Dropout rate (end of year 3)	Participants = 17% Comparison = 30%	Approx. \$1634 in	E=111 C= 98

(eval. 1992)	classes with self-paced personalized instruction plus counseling, attendance monitoring, career instruction, work experience.		Diff = -13 perc. pts % Change = -43%	current dollars	
Woodside Business Academy (eval. 1995)	Vocational school-within-a-school, extracurricular activities, career guidance, voc. ed, internships, small classes	HS Dropout rate (end of year 3)	Participants = 10% Comparison = 11% Diff = -1 perc. pts % Change = -10%	Not available	E=40 C=45

Note: For a description of these programs and citation information see Appendix A

* Indicates a statistically significant result at $p < .10$ or better.

As previously, Table 2 displays the name of the program, its key characteristics, the outcomes measured, annual costs per student of the program, and the measures of effect. Four values for each type of outcomes are included in this latter column. The first value indicates the performance of the participants to the program while the second value shows the same performance for members of the comparison group. The other two values show the difference in performance between participant and comparison groups in percentage points and in percent change relative to the comparison group.

PROGRAM EFFECTS

The school-based dropout prevention programs generally target a different population than the alternative school programs. The high school dropout rate of the students targeted by the latter programs typically range from 24 to 47 percent compared to a range of 12 to 17 percent for the former type of programs.

Both types of programs reduce the dropout rates or, conversely, increase the high school graduation rate of the participants relative to members of the comparison groups. The effects measured are large, although, few are statistically significant. They ranged from a reduction of 23 to 92 percent in the dropout rate for school-based programs and from 3 to 63 percent for alternative school programs. Because the latter programs target a more difficult population, their effects appear to be somewhat smaller.

While these effects appear impressive, they are measured for small programs engaging a relatively small number of students. It remains to be seen whether these results would hold for programs replicated on a large scale. The two studies that used much larger sample of students measured smaller effects: a one-third, statistically significant, effect in the career academies study and a 50 percent, also statistically significant, effect for alternative schools in the Mathematica study. The latter also measured a generally smaller 23 percent effect for school-based programs. Among the eight middle school programs evaluated, those that provided supplemental services to students did not affect students' dropout rates, grades, test scores, or attendance. The two programs with the greatest success at reducing dropout (by approx. 50%) were alternative schools located in facilities separate from regular schools. The other two programs that had moderate success were also alternative schools, but were located in separate facilities within the same school as regular students.

The two studies reviewed that measured effects on high school graduation rates also found large effects. The "I Have a Dream" (IHAD) program more than doubled the high school completion rates for participants at the two evaluated sites. Project "Graduation Really Achieves Dreams" (GRAD) evaluated on-time graduation rates, which increased from a 50 percent high school graduation rate for comparison students to 78 percent for program participants. Both IHAD and Project GRAD offered their participants college scholarships as an incentive to finish high school.

PROGRAM COSTS

The costs of the programs evaluated vary greatly. Generally, school-based dropout prevention programs are less expensive than alternative school programs. The costs of the former category range from a low \$300 per student in current dollars for programs such as the Coca-Cola Dropout Prevention program that rely on volunteers for mentoring and tutoring, to more than \$3,300 per student in current dollars for programs that include a stipend or scholarship as an incentive to complete high school. Alternative school programs generally cost as much, if not more, than programs that offer monetary incentives ranging from a low \$1,600 to more than \$3,800 annually in current dollars.

Chapter 5

COLLEGE GOING AND RETENTION PROGRAMS

The final category of programs focuses on encouraging students to go to college. These programs often provide the same support services as high school dropout prevention programs with an added emphasis on assuring that program participants take the necessary college preparatory courses and otherwise prepare for college. To this end, they may provide test-taking practices, study skills, remedial courses, summer courses, and/or frequent field trips to colleges and employers. Some programs include monetary incentives in the form of scholarships. Like the intervention programs reviewed in earlier chapters, college-going programs target students from low-income families and more generally from minority groups. Unlike those other programs, however, they are more selective with regard to the educational achievement level of prospective program participants. Generally, these programs target students in middle school or freshmen high school who have been identified by their teachers to have average or above average academic achievement.

STUDIES REVIEWED

Table 3 summarizes the few evaluations that have been conducted of college-going programs. The programs evaluated have been implemented at multiple locations across the nation: Advancement through Individual Determination (AVID) has been implemented nationwide, Puente in California, and the College Reach Out Program (CROP) in Florida. It also includes the large federally funded ‘Upward Bound’ program that has been implemented nationwide. Two of the programs evaluated were small programs (Posse and GRAD), and one program focused on teachers instead of students (SCORE).

Table 3: Effects of High School Intervention Programs to Increase College-going

Program	Brief Description	Outcome Measured	Impact(s)	Annual cost /participant	Sample Size
Advancement through Individual Determination (AVID) (eval. 1996)	Underachieving minority students placed in college-bound classes. Support services, academic assistance, extracurricular activities.	College going rate for all participants College going rate for Latino participants	Participants = 49% Comparison = 37% Diff = +12 perc. pts % Change = +32% Participants = 43% Comparison = 25% Diff = +18 perc. pts % Change = +72%	No available	unclear; pre/post evaluation included all participants from 1990 to 1992 at multiple sites.
Posse (eval. 1998)	Underrepresented students placed in area colleges and offered college scholarships.	College persistence	Participants = 93% Comparison = 85% Diff = +8 perc. pts % Change = +9%	Not available	E=41 C=41
Puente (eval. 1998)	Counseling, career guidance, college-prep English class, mentoring, extracurricular activities	College going rate (4-yr colleges) College going rate (2-yr colleges) College going rate (overall)	Participants = 43% Comparison = 24% Diff = +19 perc. pts % Change = +79% Participants = 41% Comparison = 51% Diff = -10 perc. pts % Change = -20% Participants = 84% Comparison = 75% Diff = +9 perc. pts % Change = +12%	approx. \$525 in current dollars	E=75 C=75
SCORE for College (eval. 1981)	Teacher training and materials provision to improve student outcomes	College going rate (4-yr colleges)	Participants = 41% Comparison = 11% Diff = +30 perc. pts % Change = +272%	Not available	unclear
Upward Bound (eval. 1999)	Academic instruction, tutoring, counseling, mentoring, activities.	College going rate	Participants = 23% Comparison = 25% Diff = -2 perc. pts % Change = -8%	approx. \$5000 per student per year	E=1500 C=1300
Project GRAD – Graduation Really Achieves Dreams (eval. 1998)	Scholarships, academic support, internships, school wide interventions to improve quality of instruction	College going rate	Pre-program = 10% Post-program = 60% Diff = +50 perc. pts % Change = +500%	Not available	E=entire school population
Florida's College Reach Out Program (CROP) (eval. 1998)	Countywide intervention in FL that provides academic, personal, and career support to students in grades 6 through 12.	College going rate (Cohort 1) College going rate (Cohort 2)	Participants = 52% Comparison = 49% Diff = +3 perc. pts % Change = +6% Participants = 51% Comparison = 43% Diff = +8 perc. pts % Change = +19%	approx \$388 in current dollars	unclear

Note: For a description of these programs and citation information see Appendix B

The programs reviewed vary widely in the population they target and in the services they provide. Three programs select participants on the recommendations of teachers (Puente, Upward Bound, and CROP) and three programs recruit and select participants in large measure based on their academic achievement (AVID, GRAD, and Posse). As a result, there are wide variations in the pre-program college-going rate of the targeted population. The two state programs, Puente and CROP that rely primarily on teacher recommendations target students with an average or greater than average probability of going to college, of 49 percent and 75 percent respectively. By contrast, the large federal Upward bound program that also relies on teacher recommendations targets students with a relatively low probability of going to college (25 percent) as does AVID. The two smaller programs target students at either extreme of the college-going rate scale: Posse targets students already going to college at the rate of 85 percent while SCORE targets students going to college at a rate of 11 percent.

All of the above programs provide counseling, tutoring, mentoring, and academic support. In addition, some programs require the active involvement of parents, offer field trips to colleges, summer courses, and/or test-taking practices. Appendix B provides more details on these programs.

With one exception, the evaluations of college-going programs are based on following small samples of students. Only the Upward Bound study used a sample that exceeded one hundred students. All but one study used the same outcome measure: *the share of participants going to college*. The exception is Posse, which focused on college persistence, or the percentage of matriculating students who complete college.

PROGRAM EFFECTS

The evaluations reviewed suggest that college-going programs have a large effect on the college-going rates of participants, although in most cases the measured effect was not statistically significant. The size of the effect decreased the higher the probability that the target group would have gone to college without the program. In instances where this probability was 25 percent or below, the effect measured exceeded 70 percent. And in instances where the program targeted students with a pre-program probability to go to college of 35 percent or more the effect ranged from 6 percent to 32 percent.

These effects should be interpreted with care. As noted above, all programs select participants using teacher recommendations or measures of achievement. Also, several of these programs required parental involvement, thereby implying some level of self-selection into the programs. Hence, those selected may have had a probability to go to college that was higher to begin with than the comparison group in these studies. In other words, the programs may have selected students that were more likely to go to college within the group they were selected from. The negative effect measured for the Upward Bound program provides some support for this hypothesis. This federal program serves hundreds of thousands of students throughout the nation that have a relatively low probability (25 percent) to go to college. We would, hence, expect that selectivity in this large public program is lower than that for the other programs reviewed.

Only one program, Posse, provides continuous support during the college years resulting in a measured 8 percent increase in the college graduation rate. However, this program is an elite program that recruits minority student leaders for enrollment at top universities nationwide. These students have a high pre-program probability of going and persisting through college graduation of 85 percent.

PROGRAM COSTS

Most of the programs reviewed cost less than \$ 1,000 per participant annually, exclusive of any scholarship or stipend. This contrast with the \$ 5,000 annual cost per student for the federal Upward Bound program, net of any scholarship or stipend. Despite this relatively larger expenditure, Upward Bound had no measured positive effect on college-going.

Chapter 6

CONCLUSIONS

A large number of programs have been designed and implemented throughout the nation to directly or indirectly increase the educational attainment of high-risk students and minorities. Few of these programs, however, have been rigorously evaluated. Hence, little is known about their relative effectiveness for guiding decisions about how best to increase educational attainment of Hispanic youths.

In this report we reviewed a small number of studies that reliably assess the effects of various types of interventions on the educational attainment of program participants, i.e. studies that have compared the outcome of program participants to those of a similar group of non-participants and have targeted primarily on non-white children or children in low income families. Placing ourselves in the role of someone who may have to decide whether and where to invest to increase the educational attainment of Hispanics despite the limited evaluative information available, we conclude with the following observations:

- Early childhood, high school dropout prevention, and college going programs that intervene at different stages in the life of students were all found to have a positive effect on the educational attainment of program participants. The size of the effect, however, varies broadly within each type of programs (Table 4).
- *Early childhood* programs were estimated to increase in-grade retention from 3 to 75 percent among high-risk children and to increase the high school graduation rate from 26 to 37 percent among students who otherwise had a low graduation rate of about 50 percent.
- *School- and community-based high school dropout prevention* programs decreased the dropout rate from 23 to 92 percent among students with a 12 to 29 percent pre-program probability of dropping out of high school. A smaller effect size, varying from 3 to 63 percent, was measured for alternative schools that targeted students with a higher dropout rate ranging from 16 to 47 percent.
- Finally, *college-going* programs were found to increase college going in a range from 7 to more than 70 percent, with the size of the effect larger for students with a low pre-program probability of going to college.

Table 4
Effects of Selected Intervention Programs on Educational Attainment

Program Type	Indicator	Pre-program baseline	Range of Effect in percentage change	Program Costs per student
Early Childhood Programs				
Small scale/model program	In-grade retention	16% to 61%	- 3% to -75%	\$9,500 plus
	High school graduation rate	49% to 53%	+26% to +37%	
Large-Scale Program	In-grade retention	36% to 63%	- 19% to -36%	\$3,000 to \$6,000
	High school graduation rate	49%	+26%	
High School Dropout Prevention Programs				
School/Community-based	High school dropout rate	12% to 29%	- 23% to -92%	\$300 to \$3,300
Alternative Schools	High school dropout rate	16% to 47%	-3% to -63%	\$1600 to \$3,800
College-going Programs				
College-going Programs	College-going rate	25% or less 35% or more	+70% or more +6% to +32%	\$1500 to \$5,000

Note: Some effects are not statistically significant. Hence, zero should be considered a reasonable inclusion when considering the range of program effects.

Most of the evaluations reviewed were based on small samples of students and in most of these studies the possibility that the program had no effect cannot be entirely discounted.

The studies provide no information about why the measured effects vary so much across programs within type of interventions. Each type of interventions offers a multiple and overlapping set of services. Indeed, the comprehensiveness and multiplicity of services are the hallmark of each one of the interventions reviewed. The evaluations revealed no single service or component that explain the outcomes of any type of interventions.

Variations in the population targeted by the various programs of a given type, however, appear to affect outcomes. It appears that dropout prevention programs have *less* success in increasing high school graduation rates among students that have a low pre-program probability of graduating (50 percent or less) than among students with a higher such probability (70 to 90 percent). The reverse relationship is suggested for college going programs with the larger effect found for programs that

targeted students with a low pre-program probability of going to college (25 percent or less). In the latter case, however, program selection based on teacher recommendations and/or student achievement suggests that only the “most likely” students to succeed in the group targeted were actually enrolled.

The studies reviewed provide some limited information about what can be expected when small programs (the majority of programs actually evaluated) are scaled-up to multiple locations serving large number of students. The evaluations of early childhood programs measured similar size effects for small- or large-scale programs. Several of the college-going programs were large scale and their measured effects were just as large as for smaller programs. The suggested lack of association with size may simply reflect the practice that programs replicated on a large scale continue to be locally implemented and managed at either the school or community level. Hence, each site manages the program at a relatively small scale.

The studies shed little light on the cost effectiveness of the various type of programs and, hence, on whether it would be more effective to intervene during the pre-school years, the primary middle school years, the high school years or the transition from high school to college. At one level, these studies suggest that there is much that can be potentially gained by intervening at any level in the educational process and certainly that it is not too late to intervene at the high school level or in the transition years from high school to college. On an annualized basis, however, it is more expensive to intervene at the pre-school level than it is at the high school or college going levels (Table 4). And the effects are not as immediate as they are when intervening in high school.

Finally, and although all types of programs designed to increase educational attainment would benefit from more rigorous evaluations, there is one type of interventions that has yet to be rigorously evaluated: college retention programs. Retention to graduation of Hispanics as well as other students already enrolled in college is low and a variety of programs have been developed to address this issue. To what degree these efforts are successful remains to be assessed.

Appendix A

DESCRIPTION OF SELECTED HIGH SCHOOL DROPOUT PREVENTION PROGRAMS

Carlmont Business Technology Academy

The Carlmont Business Academy was one of 10 recipients of federal funds to be used to replicate, expand, or design successful dropout prevention program models. One such model was a school-within-a-school "academy." In this model, beginning in 10th grade, carefully selected participants are put in small classes with carefully selected teachers. They participate in extracurricular activities, receive career guidance, vocational education, and internships. This program was implemented in the context of vocational education.

A 1995 evaluation compared the impact of the program on matched comparison groups for two cohorts of students. Overall, the project successfully reduced dropout rates for both cohorts. After two years in the program, the combined effect for both cohorts was a dropout rate of 6 percent for participants (n=85) and 16 percent for nonparticipants (n=95). Cost data are not available for this program.

The Coca Cola Valued Youth Program

The Coca Cola Valued Youth Program is a tutoring program that aims to reduce the dropout rates of at-risk, limited English proficient, high school students by improving their self-concept and academic skills and by engaging them as tutors of elementary school students (Cardenas, et. al., 1992). These at-risk high school students tutor younger students in grades seven and eight. As tutors, participants receive a minimum wage stipend and additional instruction, thereby improving their own academic skills. The program aims to minimize non-academic and disciplinary factors that contribute to dropping out such as poor self-control, truancy, and discipline problems, and to build a home-school link to enhance the support provided to students. The program was originally implemented in five school districts in San Antonio, Texas, between 1984 and 1988. Approximately 525 high school tutors and 1575 elementary tutees participated (Fashola and Slavin, 1997). More recently, the program expanded at other locations throughout the Southwest, as well as California, Florida, New York, Idaho, Oregon, and Montana.

A 1992 evaluation compared 63 program participants (tutors) to 70 students in a matched comparison group. The evaluation showed that by 1986, 12 percent of the control group and 1 percent of student tutors participating in the program had dropped out. Moreover, reading grades were significantly higher for the treatment group, as were their scores on a self-esteem measure and on a measure of attitude towards school (Fashola and Slavin, 1997; National Diffusion Network, 1995).

I Have a Dream (IHAD)

The "I Have a Dream" (IHAD) program began in 1986 when Eugene Lang promised 121 sixth graders that he would pay their way through college if they graduated high school. Today, the IHAD program uses similar sponsorship relationships to promote high school graduation and college attendance in over 160 programs in 60 cities. Students are adopted as a class by a sponsor/mentor in elementary school and the relationship is maintained through high school. Students receive counseling, mentoring, tutoring, and college scholarships.

A 1997 program evaluation compared the performance of two IHAD classes of low-income, high-risk students with the class immediately preceding them in their schools. Most students were African-American or Mexican-American. The evaluation found that the classes of IHAD participants graduated high school at rates of 76 percent and 69 percent, as compared to rates of 37 percent and 34 percent among non-participants. Program participants also attended college at a rate three times that of African American and Latino students in the school district (Gandara and Bial, 1999).

Typical IHAD programs cost between \$1,000 to \$3,000 per student annually, excluding the cost of college scholarships (Gandara and Bial, 1999).

Achievement for Latinos through Academic Success (ALAS)

Achievement for Latinos through Academic Success (ALAS) is a dropout prevention program for high-risk middle or junior high school Latino students (especially Mexican-American), from impoverished high-crime neighborhoods in Los Angeles. ALAS targets students defined as learning

disabled or severely emotionally disabled, and those who exhibited characteristics that place them at risk for dropping out of school (Fashola and Slavin, 1997).

ALAS intervenes in three domains of the students' lives: school, family, and community. School strategies include academic and social remediation, attendance monitoring, recognition and bonding activities, and frequent teacher feedback to the parent and the student. Family strategies include connecting parents with community resources and training parents in school participation and effective parenting of adolescents. At the community level, ALAS works to enhance collaboration among community agencies for youth and family services, and to improve skills and methods for serving youths and their families (Fashola and Slavin, 1997).

An evaluation (Larson and Rumberger, 1988) using treatment and control groups completed two years after the start of the program showed that by the end of 9th grade:

- 97 percent of ALAS students were enrolled in a program earning high school credits or a GED, compared to 83 percent for the comparison group;
- ALAS students had a statistically significantly higher number of total credits earned than the comparison group;
- 75 percent of ALAS students had completed one quarter of their graduation requirements, compared to 44 percent in the control group; and
- ALAS students failed classes at half the rate of the comparison group.

The evaluation also showed that by the end of the 10th grade:

- 86 percent of ALAS students remained enrolled in a program earning high school credits or a GED, versus 69 percent for the comparison group;
- 44 percent of ALAS students completed one quarter of their graduation requirements, compared to 22 percent for the control group; however,
- by the end of 12th grade, ALAS students graduated from high school at a rate comparable (32%) to the control group (27%).

The School Dropout Demonstration Assistance Program

In 1988, the U.S. government funded 89 dropout prevention demonstration projects across the country for two years. Sixteen of these projects were evaluated in 1990/91 (Rossi, no date). Of these 16 programs, five served high school students exclusively, and two served both high school and re-entry students. This review focuses on the impact of four of the high school programs.

The New Horizons Program in Des Moines, Iowa was a school-within-a-school program which offered counseling, attendance monitoring, career-related instruction, supervised work experience, and small classes of no more than 15 students at five sites. As long as participants remained in school, they worked 15 hours/week after school. Approximately 80 percent of the 240 participants were white. For the evaluation 111 students were selected from New Horizons and 98 students for the comparison group. The evaluation showed that by 1991/92 program participants had dropped out of school at a rate of 17 percent compared to 30 percent for the control group ($p < .059$). A rough estimate of program costs indicates that the total program cost was approximately \$320,000 per year - approximately \$1,333 per student.

The Memphis Partners Collaborative was a Saturday morning program for 10th grade students over-age for their grade who had excessive absences and academic deficiencies. For seventeen weeks, six hours per Saturday, participants received instruction in academic areas, job readiness, employability, and life skills. Participants who completed the program received summer jobs. Nearly all of the 237 annual participants in the program were African-American. For the evaluation, 97 Memphis Partners students were chosen from the '89/90 cohort and 78 comparison group students. Once differences in age, race/ethnicity, and gender are controlled for, the difference in the dropout rates between the participant and comparison groups was not statistically significant. A rough estimate of program costs indicates that the total program cost was approximately \$320,000 per year, or approximately \$1,350 per student.

The Cooperative Alternative Program (CAP) in Coleman, Texas was an alternative high school offered to high-risk students of seven cooperating school districts. Students were over-age for their

grade, had high truancy or suspension rates, some had substance abuse problems, were pregnant, were parenting teens, and some had dropped out of school previously. In 1989/90 CAP served 145 students, 66 of which continued in 1990/91. Participants were largely white or Hispanic. Dropout rates were very high in both the CAP and comparison group. 102 students were selected for the evaluation and 100 students in the comparison group. After two years, the school dropout rate was 41 percent for CAP participants and 47 percent for the comparison group. A rough estimate of program costs indicates that the total program cost was approximately \$320,000 per year, or approximately \$3,100 per student.

The Diversified Educational Experiences Program (DEEP) in South Carolina was run both as part of the regular school program, and as an alternative school. The evaluation compared alternative school participants to regular school participants. At-risk students were referred to the alternative school and were selected for participation by a review committee. Students were largely white, although 16 percent of participants were black. For the evaluation, 95 of the 116 students in the alternative school program were selected and 97 of the 350 students in the regular school DEEP program were selected for the comparison group. After three years, the dropout rates were 41 percent for the alternative school and 17 percent for the regular school program. A rough estimate of program costs indicates that the total program cost was approximately \$320,000 per year, or approximately \$2753 per student.

Career Academies

The Career Academies evaluated by the Manpower Research Demonstration Project (Kemple and Swipes, 2000) are schools-within-schools. Such a school-within-a-school provides small groups of students the opportunity to stay with a group of teachers over a period of three or four years of high school. They receive both academic and vocational education, using career as a theme to integrate the two. The Career Academies are partnered with local employers to provide students with work opportunities. The Academies target a wide range of students, from high- to low-risk.

The MDRC evaluation of the Career Academies showed that the approach had a statistically significant impact on high school outcomes for different types of students. Compared to non-Academy students, high-risk students experienced a statistically significant:

- decline in dropout rates (21% compared to 32%);
- increase in the percent of students completing the required credits to graduate (40% compared to 26%);
- increase in the percent of students completing the academic core courses (32% compared to 16%);
- increase in the percent of students taking 3 or more career or vocational courses (58% compared to 38%); and
- an increase in the percent of students applying to college (51% compared to 35%).

The Career Academies had fewer positive effects on low-risk students. Compared to non-Academy students, low-risk Career Academy participants experienced a statistically significant:

- increase in the percent of students completing the required credits to graduate (86% compared to 75%);
- increase in the percent of students taking 3 or more career or vocational courses (77% compared to 42%); and
- increase in the percent of students applying to college (71% compared to 79%).

Finally, medium-risk students appear to gain the least from the Career Academy model – experiencing a statistically significant gain in only one area: an increase in the percent of students taking three or more career or vocational courses (66% compared to 48%).

Appendix B

DESCRIPTION OF SELECTED COLLEGE-GOING PROGRAMS

Advancement Via Individual Determination (AVID)

AVID helps low-achieving, low-income, minority high school students who have average-to-high achievement test scores but low grades prepare to attend college. The program's primary intervention is to "untrack" these students from traditional non-college bound classes and place them in the college-bound track. Support services are provided to students. Students attend a special elective class that meets once a day for three to four years. Students also receive instructions from college tutors on note-taking, test-taking, and study skills. Once a week they make a field trip or hear a guest speaker.

The program began in 1980 at a high school in San Diego. By 1991, 67 San Diego high schools in San Diego County and four high schools outside the county had implemented the AVID program. A post-participation evaluation of students who participated in AVID between 1990 and 1992 found that:

- 48% of AVID graduates attended four year colleges, as compared to 37% of students from San Diego city schools and 39% of students nationally;
- 43% of Latino students who participated in AVID for three years attended four-year colleges, as compared to 25% from San Diego city schools and 29% nationally;

According to its website, AVID currently serves over 65,000 students in 1200 schools located in 21 states and 11 foreign countries (<http://www.avidonline.org/default.asp?contentID=76>). Program cost information is not available for this program.

Posse

The Posse program is a high school program that places underrepresented students from the New York City area into colleges. While students may be underrepresented in colleges, the participants in the Posse program do not fit the traditional profile of a high-risk student (Gandara and Bial, 1999). According to the Posse Foundation website, the program identifies, recruits, and selects student leaders from public high schools to form multicultural teams called "Posses." These teams receive intensive eight-month training to prepare them for enrollment at top universities nationwide.

The program aims to 1) increase access to college for underrepresented students, 2) help selective colleges increase student diversity, and 3) graduate more students from underrepresented backgrounds from selective universities. The program recruits, selects, and trains a group of students in academic, social, and personal skills. Participants engage in workshops over the course of eight months to build skills in team building, cross-cultural communication, and leadership. Program participants receive a full-tuition scholarship and on-campus support services to help them succeed. Support is provided for the full four years of college (Gandara and Bial, 1999).

A 1998 evaluation of the program compared 41 Posse members at Vanderbilt University with 41 randomly selected athletes at the college and 41 randomly selected students with similar SAT scores. The evaluation found that the college persistence rate was 93 percent for Posse students and 85 percent for non-Posse students. Academic performance between the groups was similar (Gandara and Bial, 1999).

The cost of the Posse program is high. Since 1990, the program has placed 175 students in top colleges such as Brandeis, DePauw, Lehigh, Middlebury, Rice, and Vanderbilt. These students have received \$14 million in scholarships from Posse partner universities (<http://www.possefoundation.org/>, 2000).

Puente High School Program

The Puente High School Program is an outgrowth of the Puente College Program that helps students make the transition from a 2-yr to a 4-yr college. The high school program, implemented in

32 California high schools, aims to help students stay in school, enter college, and succeed in college. While Puente is open to all students, it currently serves a largely Latino population (Gandara and Bial, 1999; <http://www.puente.net/highschool.htm>). The target population of the program is non-immigrant, English-speaking Mexican American ninth grade students who are nominated for the program by a middle school teacher or counselor (Gandara, 1998).

Program participants work with a counselor who introduces them to college and career opportunities and explains the college admission process. They take a two-year college preparatory English class, meet with a mentor who has been successful in school, and take field trips to college campuses and professional workplaces (www.puente.net/highschool.htm). A cohort usually consists of approximately 30 students with mixed academic achievement. Parents are interviewed as part of the selection process and must agree to participate in the program. (Gandara and Bial, 1999)

A 1998 evaluation compared the performance of 900 Puente and 900 non-Puente students over the four years of high school. The evaluation showed that while academic achievement measures were similar for both groups, Puente students enrolled at 4-yr colleges at a rate of 43 percent as compared to 24 percent for non-Puente students. Similarly, 41 percent of Puente students went on to 2-year colleges compared to 51 percent of non-Puente students (Gandara and Bial, 1999).

The cost of the Puente program is approximately \$500 per student annually (Gandara and Bial, 1999).

SCORE for College (SCORE)

SCORE is a comprehensive support program designed to increase the performance of high-risk students from language minority and diverse ethnic backgrounds in grades 7-12. The project trains schools to use appropriate student placement and teaching techniques, provides study skills and academic support, and provides counseling and mentoring. Trainers work with schools, train staff, and provide follow-through materials and consultation. Students are heterogeneously grouped in a core curriculum leading to university eligibility upon graduation. They receive tutoring and study skills training, academic guidance, motivational activities, and summer courses ranging from college

preparatory courses to actual college courses to remedial courses. Their parents also receive support (Fashola and Slavin, 1997; National Diffusion Network, 1995).

A 1981 evaluation of SCORE compared University of California eligibility rates of SCORE students with those of the state of California. Eligibility rates for SCORE students were 40 percent compared to 5 percent in a random sample of high school African-American and Latino graduate students surveyed by the California Post-Secondary Education Council (CPEC). SCORE students also enrolled at a higher rate in four-year colleges than did a selected comparison group of minority high school graduates: 41% vs. 11%. Finally a comparison of 99 SCORE seniors with 112 students from a matched control school found that 100 percent of the SCORE students completed their college requirements compared to 52 percent of the students in the control group (Wells, 1981 in Fashola and Slavin, 1997; National Diffusion Network, 1995).

Start-up costs include \$2000 for one three-day training on site and \$250 per site for materials. The study skills training costs \$1500 per site for one two-day training, and \$15 per participant for materials. Study skills workbooks for student participants are available for \$5 each. Supplementary teaching materials are approximately \$500 (National Diffusion Network, 1995).

Upward Bound

Upward Bound is a locally administered program funded as part of the Federal TRIO Programs designed to motivate and support students from disadvantaged backgrounds. The program helps people from families with incomes under \$24,000 (where neither parent graduated from college) prepare for higher education. In order to qualify for the program, students must have completed the 8th grade, be between the ages of 13 and 19, and need academic support in order to pursue a program of postsecondary education. The program requires that two-thirds of the participants must be both low-income and potential first-generation college students. The remaining one-third must be either low-income or potential first-generation college students. Students are selected based on recommendations from local educators, social workers, clergy, or other interested parties. Currently, 681 programs are in operation throughout the United States. Students with behavioral and emotional problems are usually screened out of the pool of applicants (Fashola and Slavin, 1997). All Upward Bound projects must

provide instruction in math, laboratory science, composition, literature, and foreign language. Additional services include academic support, counseling, and mentoring.

The authorizing legislation for TRIO programs mandates on-going evaluations. The most recent evaluation of Upward Bound was completed by Mathematica Policy Research, Inc. for the Department of Education in 1999. During the 1992/93 and 1993/94 school years Mathematica randomly assigned 1,500 students to participate in Upward Bound at 67 sites. They also randomly assigned 1,300 students to a control group. It is important to point out that the 1,500 participants were among those offered the opportunity to participate and took advantage of that opportunity. In fact, on average 18 percent of eligible students choose not to participate. Attrition from the program is high, with only 44 percent of students still participating in the program upon completion from high school (Myers, D.V. and A. Schirm, 1999).

The study found that Upward Bound had no impact on high school graduation rates – 59 percent for participants compared to 63 percent for the comparison group. The program also had little impact on credits earned in high school, and no impact on outcomes related to participation in extracurricular activities, school misbehavior, or parent involvement. In fact, in some cases the control group had better outcomes than Upward Bound students. With respect to college-going, 23 percent of participants attended college, as compared to 25 percent of the control group.

Program costs average approximately \$5,000 per student per year.

Project GRAD

Project GRAD (Graduation Really Achieves Dreams) is a high school dropout prevention/college attendance program serving a Texas high school that is 83 percent Latino and very low-income. It was started in 1989 by a former CEO of Tenneco in collaboration with the University of Houston. Tenneco and other funders promised every student who graduated on time from Jefferson Davis High School with a GPA of 2.5 a would receive an annual \$1000 college scholarship. Students attended two five-week summer academic institutes held at the University of Houston, participated in paid internships in local businesses.

A pre/post evaluation of Project GRAD compared the entire school population in 1989 and in 1993 (Ketelsen, 1994 in Fashola and Slavin, 1997). Between 1989 and 1993, the percent of students graduating on time rose from 50 percent to 78 percent. In addition, college attendance rose from 10 percent of all graduates to 60 percent. The percentage of students passing the 11th grade Texas Assessment of Academic Skills increased from 37 percent to 86 percent. During the same period, the number of students enrolled in honors courses doubled.

In contrast to the 1994 evaluation, a 1995 comparison of Project GRAD to a control school showed that although dropout rates at the GRAD high school dropped from 18 percent in 1988/89 to 12 percent in 1994/95, similar reductions also occurred in comparison schools (Opuni, 1995 in Fashola and Slavin, 1997). Differences favoring Project GRAD were found in on-time graduation rates but these differences were small. However, among Project GRAD students who did graduate, college attendance rates increased from 20 percent in 1988-89 to 41 percent.

Florida's College Reach Out Program (CROP)

Florida's College Reach Out Program (CROP) is a statewide effort to increase the preparation of low-income, educationally disadvantaged youths traditionally underrepresented in colleges. The program recruits students in grades 6 through 12 and provides them with academic, personal, and career support and counseling. In 1995/96 forty-six of Florida's 67 counties participated in the program, totaling approximately 6,200 students. Programs are locally administered with different mixes of program components (Gandara and Bial, 1999).

In 1998, the performance of CROP participants was compared to a random selection of non-CROP participants for both the 1991/92 and 1995/96 cohorts. The evaluation found that the '91/92 cohort was not different from the non-CROP students with respect to college enrollment (52 percent and 49 percent, respectively). The '95/96 cohort, however, enrolled in college at a rate of 51 percent compared to 43 percent for non-CROP students (Gandara and Bial, 1999).

The average annual cost for a program participant is \$365 (Gandara and Bial, 1999).

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